DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

APPLIED PHYSICS - I

[Maximum Marks : 75]   [Time : 3 hours]

PART–A

I. Answer **all** the following questions in one word or sentence. Each question carries 1 mark.

(9x1=9 marks)

		Module Outcome	Cognitive level
1	The standard reference used to compare a physical quantity in a measurement is called…………	M1.01	R
2	……………is the SI unit angular velocity.	M2.01	R
3	Moment of inertia of a solid sphere of mass M and radius R about its diameter is……….....	M2.02	R
4	In the case of a stone moving in vertically upward direction, the work done by gravity is……………… (positive / negative).	M3.01	U
5	In the case of iron box……..energy is converted into heat energy.	M3.02	U
6	Which is the fastest mode of heat transfer?	M3.04	U
7	Reciprocal of bulk modulus is called……………….	M4.01	R
8	Write down the expression for pressure due to liquid column of height 'h' and density 'ρ'.	M4.02	R
9	The constant velocity attained by a body moving through a viscous medium is called…………	M4.03	R

PART B

II. Answer **any Eight** questions from the following. Each question carries 3 marks.

(8x3=24 marks)

		Module Outcome	Cognitive level
1	Write down any six fundamental quantities and their units in SI.	M1.01	R
2	State and explain Newton's second law of motion.	M1.04	R
3	If the ice on the polar caps of the earth melts, how will it affect the duration of the day?	M2.03	A
4	Derive the relation between linear velocity and angular velocity.	M2.01	U
5	State laws of friction.	M3.01	R
6	Define power. What is its SI unit?	M3.03	R
7	Cooking utensils are made of metals and their handles are made of wood. Why?	M3.04	U
8	Differentiate between gauge pressure and absolute pressure.	M4.02	U
9	Write a note on ascent formula.	M4.02	R
10	Differentiate between streamline flow and turbulent flow.	M4.04	U

PART C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	The readings of an experiment involving measurement of time give 2.78s, 2.90s, 2.92s and 2.85s. Find relative error and percentage error.	M 1.02	A
	OR		
IV	Prove principle of conservation of linear momentum using Newton's second law and third law in the case of collision of two bodies.	M1.04	U
V	(a) Explain banking of road.		
	(b) Deduce expression for angle of banking.	M2.01	U
	OR		
VI	(a) Explain the term 'moment of inertia'		
	(b) State and explain theorems of parallel and perpendicular axes.	M2.02	R
VII	(a) Define vector quantity. Give two examples. (b) State and explain parallelogram law of vector addition.	M1.03	R
	OR		
VIII	A stone of mass 5 kg is tied to a string 2m long and whirled in a horizontal circle making 60 revolutions per minute. Find the tension in the string.	M2.01	A
IX	Prove that total energy is conserved in the case of a freely falling body.	M3.02	U
	OR		
X	Discuss the working of mercury thermometer and pyrometer.	M3.04	R
XI	Explain three moduli of elasticity.	M4.01	R
	OR		
XII	The diameter of a water pipe decreases from 15 cm to 7 cm. If the velocity at the wider portion is 5 m/s. Calculate the velocity at the narrow region.	M4.04	A
XIII	An engine pumps 100 kg of water through a height of 10 m in 5s. If the efficiency of the engine is 60%, what is the power of the engine?	M3.03	A
	OR		
XIV	State Bernoulli's theorem. Explain an application of Bernoulli's theorem.	M4.04	U

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